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10/086,887	03/04/2002	Yukio Kinoshita	840.41268X00	1874

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EXAMINER

VERSTEEG, STEVEN H

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 06/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/086,887

Applicant(s)

KINOSHITA ET AL.

Examiner

Steven H VerSteeg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference character(s) mentioned in the description: **17** (see page 18, line 9) and **17fg** (see page 27, line 14). Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **6** (Figure 1); **17b** (Figure 2c); **8b** (Figure 4A); **51** and **52** (Figure 4B); **17g** (Figure 7c); and **15**, **12**, **116**, **1c**, **61b**, **8c**, **60b**, **18a**, **18**, and **16** (Figure 9). Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any

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required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. A substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. The substitute specification filed must be accompanied by a statement that it contains no new matter.

### ***Claim Objections***

4. Claims 1-5, 7, 8, 12-14, 16, 21, 22, 24, 27, and 28 are objected to because of the following informalities: “one of electrodes” should be “one electrode” in claim 1 at line 3; “another of said electrodes” should be “another electrode” in claim 1 at line 5; “bear” should be “bare” in claim 1 at line 5; “is” should be “are” in claim 1 at line 7; a comma needs inserted before “a waveform” in claim at line 11; “and” needs deleted in claim 3 at line 3; “each” needs deleted in claim 16 at line 4. Claims 2-5, 7, 8, 12-14, 21, 22, 24, 27, and 28 depend from claim 1 and contain all of the limitations of claim 1. Therefore, claims 2-5, 7, 8, 12-14, 21, 22, 24, 27, and 28 are objected to for the same reasons as claim 1. Claims 13, 21, 22, and 28 depend from claim 3 and contain all of the limitations of claim 3. Therefore, claims 13, 21, 22, and 28 are objected to for the same reasons as claim 3. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-14, 18, and 20-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

7. The phrase "arranged closely along to an insulation core wire" in claim 1 at lines 7-8 is unclear.

8. Claims 2-5, 7, 8, 12-14, 21, 22, 24, 27, and 28 depend from claim 1 and contain all of the limitations of claim 1. Therefore, claims 2-5, 7, 8, 12-14, 21, 22, 24, 27, and 28 are rejected for the same reasons as claim 1.

9. In claim 2, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

10. Regarding claim 2, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

11. Claims 12 and 27 depend from claim 2 and contain all of the limitations of claim 2. Therefore, claims 12 and 27 are rejected for the same reasons as claim 2.

12. Claim 4 is out of scope. Claim 4 depends from claim 1. Claim 1 is directed to a discharge generation apparatus, yet claim 4 is directed to an exhaust gas processing apparatus.

13. Claims 5 and 24 depend from claim 4 and contain all of the limitations of claim 4. Therefore, claims 5 and 24 are rejected for the same reasons as claim 4.

14. Regarding claim 5, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

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15. Claim 24 depends from claim 5 and contains all of the limitations of claim 5. Therefore, claim 24 is rejected for the same reasons as claim 5.

16. In claim 6, the phrase "etc." is indefinite.

17. Claim 6 recites the limitation "said electrode necessary for processing" in line 9. There is insufficient antecedent basis for this limitation in the claim.

18. Claim 23 depends from claim 6 and contains all of the limitations of claim 6. Therefore, claim 23 is rejected for the same reasons as claim 6.

19. Claim 7 is out of scope. Claim 7 is directed to an exhaust gas processing apparatus and depends from claim 1. Claim 1 is directed to a discharge generation apparatus.

20. In claim 7, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

21. Claim 7 recites the limitation "said insulation substance" in line 4. There is insufficient antecedent basis for this limitation in the claim.

22. Regarding claim 7, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

23. Claim 7 recites the limitation "said ceramic" in line 4. There is insufficient antecedent basis for this limitation in the claim.

24. In claim 7, the limitation "which is burdened to alumina" is unclear.

25. Claim 8s is out of scope. Claim 8 is directed to an exhaust gas processing apparatus and depends from claim 1. Claim 1 is directed to a discharge generating apparatus.

26. In claim 8, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

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27. Claim 8 recites the limitation "the barrier discharge" in line 3. There is insufficient antecedent basis for this limitation in the claim.

28. Claim 8 recites the limitation "the noble metal" in line 4. There is insufficient antecedent basis for this limitation in the claim.

29. In claim 9, the phrase "etc." is indefinite.

30. In claim 9, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

31. Claim 25 depends from claim 9 and contains all of the limitations of claim 9. Therefore, claim 25 is rejected for the same reasons as claim 9.

32. In claim 10, the phrase "a catalyst is burden to said wire" is unclear.

33. Claim 10 recites the limitation "the discharge" in line 7. There is insufficient antecedent basis for this limitation in the claim.

34. Claim 26 depends from claim 10 and contains all of the limitations of claim 10.

Therefore, claim 26 is rejected for the same reasons as claim 10.

35. Regarding claim 11, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

36. Claim 12 is out of scope. Claim 12 is directed to an exhaust gas decomposition apparatus and depends from claim 2. Claim 2 is directed to a discharge generation apparatus.

37. In claim 12, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

38. Regarding claim 12, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

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39. Claim 12 recites the limitation "the exhaust gas" in line 7. There is insufficient antecedent basis for this limitation in the claim.

40. Claim 27 depends from claim 12 and contains all of the limitations of claim 12. Therefore, claim 27 is rejected for the same reasons as claim 12.

41. Claim 13 is out of scope. Claim 13 is directed to an exhaust gas decomposition apparatus and depends from claim 3. Claim 3 is directed to a discharge generation apparatus.

42. In claim 13, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

43. Regarding claim 13, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

44. Claim 13 recites the limitation "the exhaust gas" in line 7. There is insufficient antecedent basis for this limitation in the claim.

45. Claim 28 depends from claim 13 and contains all of the limitations of claim 13. Therefore, claim 28 is rejected for the same reasons as claim 13.

46. Claim 14 is out of scope. Claim 14 is directed to a NO<sub>x</sub> decomposition apparatus and depends from claim 1. Claim 1 is directed to a discharge generation apparatus.

47. In claim 14, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

48. In claim 18, the phrase "sulfuric oxide which is burdened in advance" is unclear.

49. Claim 20 is out of scope. Claim 20 is directed to an exhaust gas processing apparatus and depends from claim 17. Claim 17 is directed to a discharge element.

50. Claim 21 is out of scope. Claim 21 is directed to an exhaust gas processing apparatus and depends from claim 3. Claim 3 is directed to a discharge generation apparatus.



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51. Claim 22 depends from claim 21 and contains all of the limitations of claim 21.

Therefore, claim 22 is rejected for the same reasons as claim 21.

52. Regarding claim 22, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

53. Claim 23 is out of scope. Claim 3 is directed to an exhaust gas processing apparatus and depends from claim 6. Claim 6 is directed to a particle substance processing apparatus.

54. In claim 23, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

55. Claim 23 recites the limitation "the barrier discharge" in line 2. There is insufficient antecedent basis for this limitation in the claim.

56. Claim 23 recites the limitation "the noble metal" in line 3. There is insufficient antecedent basis for this limitation in the claim.

57. Claim 23 recites the limitation "the exhaust gas" in line 5. There is insufficient antecedent basis for this limitation in the claim.

58. Claim 24 is out of scope. Claim 24 is directed to a NO<sub>x</sub> decomposition apparatus and depends from claim 5. Claim 5 is directed to an exhaust gas processing apparatus.

59. In claim 24, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

60. Claim 25 is out of scope. Claim 25 is directed to a NO<sub>x</sub> decomposition apparatus and depends from claim 9. Claim 9 is directed to an exhaust gas processing apparatus.

61. In claim 25, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

62. Claim 26 is out of scope. Claim 26 is directed to a NO<sub>x</sub> decomposition apparatus and depends from claim 10. Claim 10 is directed to an exhaust gas processing apparatus.

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63. Claim 27 is out of scope. Claim 27 is directed to a NO<sub>x</sub> decomposition apparatus and depends from claim 12. Claim 12 is directed to an exhaust gas decomposition apparatus.

64. In claim 27, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

65. Claim 28 is out of scope. Claim 28 is directed to a NO<sub>x</sub> decomposition apparatus and depends from claim 13. Claim 13 is directed to an exhaust gas decomposition apparatus.

66. In claim 28, the phrase "NO<sub>x</sub>" is unclear because "x" is an undefined variable.

***Claim Rejections - 35 USC § 102***

67. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

68. Claims 9, 17, 19, 20, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,576,970 to Goto.

69. For claim 9, Applicant requires an exhaust gas processing apparatus characterized in that to the apparatus, an ammonium high pressure reaction means or a plasma synthesis means is installed, using the nitrogen in air generated using the discharge and hydrogen generated using an electric decomposition, a necessary amount of ammonium is generated; and using the ammonium to decompose NO<sub>x</sub> safely and completely.

70. Goto discloses a gas turbine that produces exhaust is treated with ammonium under high pressure to help decompose NO<sub>x</sub> safely and completely (abstract).

71. For claim 25, Applicant requires a NO<sub>x</sub> decomposition apparatus such that when an amount of NO<sub>2</sub> and NO<sub>x</sub> is controlled by discharge energy according to electric application voltage, NO<sub>x</sub> concentration and NO<sub>2</sub> concentration of before and after are detected, a change condition of normal, an increase and decrease state is grasped, and a discharge energy point is determined.

72. Goto detects a change in condition and then adjusts the discharge energy (abstract).

73. For claim 17, Applicant requires a discharge element characterized in that in a discharge insulation wire, plural discharge wires are constituted, a length of the discharge wire is adjusted and a thickness of the wire is changed over thereby a discharge characteristic is changed over freely and suitably. The limitations are method limitations of an apparatus, the discharge element. Goto discloses the discharge element (abstract) and it has the ability to so perform the above claimed method limitations.

74. For claim 20, Applicant requires an exhaust gas processing apparatus by combining an adjustment according to the discharge and an electric discharge energy adjustment and an organic adjustment to thereby process ability performance, a processing reliability performance and a cost performance are improved remarkably. Again, Applicant has merely claimed method limitations of an apparatus that do not further limit the apparatus. Goto discloses an exhaust gas processing apparatus (abstract) and thus meets the limitations.

75. For claim 19, Applicant requires an exhaust gas processing apparatus characterized in that in an exhaust gas processing means, a decomposition, a generation and a removal of a harmful gas and a particle substance are carried out safely and surely and an energy saving is carried out to utilize effectively heat that is generated in the means and a heat insulation structure

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is employed. Goto uses a recycling system to ensure that the heat is recycled and not lost (col. 1, l. 30-60).

76. Claims 6, 15, 16, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,263,317 to Watanabe et al. (Watanabe).

77. For claim 6, Applicant requires a particle substrate processing apparatus characterized in that the particle substance is adsorbed by a permeation ceramic filter; the particle is divided to a single electrode pair or plural electrode pairs; an adhesion condition is sensed by a resistance value of between the electrode; and the electrode necessary for processing is processed selectively; thereby a performance improvement and a function maintenance are carried out. Applicant has provided numerous method limitations in an apparatus claim. The method limitations do not provide any apparatus limitations. Watanabe discloses a particle substance processing apparatus with a ceramic filter and sensing means to detect a condition (abstract).

78. For claim 15, Applicant requires an exhaust gas processing system characterized in that in an exhaust gas processing means used for a moving machine such as an automobile using a discharge and an electric application, an additional electric power amount for necessary to the exhaust gas processing is added; and to form a compatibility to an already established generator, a generator is exchanged over. Again, Applicant has applied method limitations to an apparatus claim. The method limitations do not further limit the apparatus claim. Watanabe discloses an exhaust gas purifying apparatus for an automobile (Abstract) comprising additional electric power (Fifth embodiment).

79. For claim 16, Applicant requires a processing apparatus construction system characterized in that in an exhaust gas processing apparatus, a processing element is formed to

module every function and the processing element is constituted in series, parallel, or a combination thereof; thereby a capacity adjustment and a durability performance are improved and at the same time a productivity performance, a reliability performance, and a maintenance performance are improved remarkably. Applicant has again provided method limitations to an apparatus claim. The method limitations do not provide any patentable limitations to the apparatus. Watanabe discloses a processing apparatus construction system with a processing element in series (Fifth embodiment).

80. For claim 23, Applicant requires an exhaust gas processing apparatus characterized in that by combining NO<sub>x</sub> processing apparatus using the barrier discharge, no using completely the noble metal the processing is carried out completely; and in response to the component of the exhaust gas, a following process is carried out effectively. Again, Applicant has claimed method limitations in an apparatus that do not provide any patentably weight to the apparatus. Watanabe is a NO<sub>x</sub> exhaust processing apparatus (abstract).

81. Claim 18 is rejected under 35 U.S.C. 102(e) as being anticipated by US 6,374,595 B1 to Penetrante et al. (Penetrante).

82. For claim 18, Applicant requires an exhaust gas processing apparatus characterized in that in a means for decomposing a particle substance, NO<sub>2</sub> is generated according to the discharge and at the same time the particle substance is removed completely using a sulfuric oxide in fuel and sulfuric oxide that is burdened in advance without a catalyst and an additional adjustment of oxygen or hydrocarbon is performed as occasion demands.

83. Again, Applicant has placed method limitations into an apparatus claim that do not provide any patentable weight to the apparatus claims. Penetrante discloses an exhaust gas

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processing apparatus (Abstract) in which sulfuric oxide is used to remove NO<sub>2</sub> (col. 6, l. 47 – col. 7, l. 6).

### ***General Information***

For general status inquiries on applications not having received a first action on the merits, please contact the Technology Center 1700 receptionist at (571) 272-1700.

For inquiries involving Recovery of lost papers & cases, sending out missing papers, resetting shortened statutory periods, or for restarting the shortened statutory period for response, please contact Denis Boyd at (571) 272-0992.

For general inquiries such as fees, hours of operation, and employee location, please contact the Technology Center 1700 receptionist at (571) 272-1300.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H VerSteeg whose telephone number is (571) 272-1348. The examiner can normally be reached on Mon - Thurs (6:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Steven H VerSteeg  
Primary Examiner  
Art Unit 1753

shv  
June 15, 2004